



# Cash holdings and earnings quality: the role of political connections

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## Article History

Received: 10 January, 2024

Revised: 23 February, 2024

Accepted: 26 February, 2024

## Keywords

Cash holdings,  
operating cash flow,  
earnings quality,  
political connections.

## Abstract

**Purpose:** This research investigates the relationship between cash holdings and earnings quality in companies with political connections on the Tehran Stock Exchange (TSE).

**Design/method/methodology:** The present study is descriptive-applied and analyzes data from 120 companies listed on the TSE from 2016 to 2022. Multiple regression was used to test the hypotheses.

**Findings:** The hypothesis testing indicates a significant relationship between the level of cash holdings, operating cash flow in the previous year, current year, and next year, and the earnings quality of companies with political connections.

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## How to cite this article:

Norouzi Sarang, A. (2024). Cash holdings and earnings quality: the role of political connections. *Novel Explorations in Computational Science and Behavioral Management*, 2(1), 1-13.

<https://doi.org/10.22034/necsbm.2024.411282.1038>

openaccess

## 1. Introduction

Today, in capitalist societies, companies are organized in a way that they constantly seek to increase their resources and interests. In fact, competition in these societies is such that planning for the future of a company and earning profits are essential requirements for a successful business. Ignoring these aspects removes companies from the competition loop. Competition in advanced markets, moving towards efficiency, has led companies not to overlook even the smallest investments by shareholders and to constantly strive to attract cash resources from investors and creditors. In reality, a successful company in today's business environment is one that has good cash resources and can invest and increase them appropriately. Cash resources are provided by

shareholders and creditors, which are the most influential factors on their investment decisions, profits, and the cash flows of the company.

The accounting profit consists of two main parts, one of which is cash, representing the cash generated from operational activities during a period. The other part consists of liability items (Hosseini, 2006; Al-Haddad & Al-Ghoul, 2023).

The liability section of profits is significantly more important than its cash section in evaluating the company's performance because the cash portion of profits, due to timing and matching issues, leads to an inaccurate measurement of the company's performance (Hosseini, 2006; Farinha et al., 2018). On the other hand, the flexibility created by accepted accounting principles and the use of estimates in the liability accounting process have made liability items

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susceptible to profit manipulation. They are generally used for profit management by managers. However, managers can also manipulate profits through actual activities. For example, by timing certain transactions and using fictitious transactions. In this research, the main emphasis is on liability items, which are divided into two categories: discretionary accruals and Non-discretionary accruals (Chada & Varadharajan, 2024).

Non-discretionary accruals (inherent accruals) are items that exist in the operational environment of a specific company, and management usually cannot change them. It is expected that management will not intervene in their occurrence. In other words, they naturally arise as a result of transactions. Examples include changes in receivables, changes in payables, and changes in inventory (Hosseini, 2006).

Discretionary accrual are items that can be changed in relation to the management decisions of the company. They are influenced by the company's selected policies and procedures. The more discretion the manager has in creating them, the more potential there is to use them to impact profits (Sitienei, 2023). Examples include depreciation expenses, income from investments, gains and losses from the sale of fixed assets, and the amortization of loans. However, discretionary accrual are not always unchangeable.

In this study, discretionary accrual are further divided into short-term and long-term categories. Short-term discretionary accrual affect the circulation of capital accounts, leading to changes in current assets and liabilities, such as receivables and payables. Long-term discretionary accrual include depreciation, employee retirement, and the revaluation of assets.

Furthermore, numerous studies indicate that adherence to accounting standards alone cannot guarantee the quality of financial statements and the items included in them. Other factors also affect the quality of financial statements and financial reporting. Financial statements prepared by an economic entity are influenced by various factors in addition to accounting standards. One significant and noteworthy factor is the political influence of managers and owners of economic entities in political arenas and their relationships with centers of political power (Chan et al., 2012). Political connections and influence not only affect the financial position of economic entities but also influence the motivations of managers regarding financial reporting

and the preparation of financial statements. This is expected to ultimately lead to significant differences in the quality of financial statements between companies with political connections and others.

The quality of financial statements is a highly interesting topic in the accounting literature, and in recent years, empirical researchers have paid considerable attention to evidential accounting theories. The quality of financial statements is primarily assessed and measured through the quality of accruals (earnings quality) (Palepu & Healy, 2003). Ball et al. (2003) argue that the quality of accruals is influenced by various internal and external organizational factors. Chan et al. (2011) argue that political connections add a new dimension to firm returns, making the creation process more complex. This complexity can lead to errors in estimating accruals, resulting in a decrease in the accruals quality.

From the perspective of a self-interested manager, the question of whether to spend or retain the received cash flows is raised in relation to the interests of higher expenditures today or greater flexibility in the future. While the quality of investments is often an ex-post event and is identified with delay, large cash reserves can be an important criterion for shareholders' quick judgment. Generally, companies with weak governance that are not financially pressured tend to make more investments, and accumulated cash reserves can be quickly consumed as a significant indicator for shareholders' prompt judgments. Managers under weak control prefer to use funds for obtaining and investing in other companies through capital expenditures and research and development, rather than internal investments. Shareholders question whether investment decisions and levels of cash flows obtained from them lead to a reduction in earnings quality for companies with weak governance or not.

Cash is a crucial and vital resource for every economic entity. Striking a balance between available cash and cash needs is one of the most important factors for the economic health and continuity of business units. In many financial decisions, including valuation models for securities, methods for evaluating capital projects, etc., cash flows play a central role.

In situations of informational asymmetry, retaining cash can prevent the costs of incorrect choices, which increase with external financing, and thus contribute to

increasing the company's value. On the other hand, the accumulation of non-performing cash can lead to reduced efficiency and ultimately a decrease in the company's value (Pinkowitz et al., 2006).

The present study aims to provide evidence regarding company valuation, specifically investigating whether retaining cash and political connections impact earnings quality. Therefore, considering the aforementioned discussions, this research seeks to answer the fundamental question of whether retaining cash and political connections affect earnings quality.

### 1.1. Research Literature

Accounting earnings, as one of the key information for decision-making, are calculated based on the accrual basis. According to the approach, profits are identified by realizing revenues and incurring expenses. The use of the accrual basis in accounting results in the creation of items known as accruals, which can be divided into two categories: discretionary and non-discretionary (Ebrahimi & Amri-Asrami, 2024).

Since the accrual basis does not necessarily involve the recognition of cash flows associated with the realization and payment of cash in the calculation of profits, and since predictions and estimates are used in profit calculation, the possibility of earnings manipulation by management exists (Mazloom et al., 2013). Therefore, the existence of a suitable ground for earnings manipulation, due to reasons such as conflicts of interest between managers and owners and inherent limitations of accounting, such as errors in predictions and estimates and the use of different accounting policies by firms, makes real earnings differ from reported earnings in financial statements. This raises the question of how much we can rely on this figure as a basis for making decisions. For years, financial analysts have understood that analyzing financial statements of companies is challenging due to multiple weaknesses in measuring accounting information. They have also realized that in determining the value of a company, attention should not only be given to the quantity of earnings but also to its quality. Therefore, due to the special importance of earnings for users of financial information, the concept of earnings quality has been introduced to examine the reliability of reported earnings by companies using the criteria provided for it.

Earnings quality is a relative concept that depends on various perspectives and attitudes, so multiple definitions of it have been proposed. Earnings quality refers to the ability of earnings to predict future operating cash flows (McNichols, 2000). According to Dechow & Ge (2006), earnings quality reflects the fairness of the future profit generation process of a business unit. From the perspective of Lang and Litzenberger (1989), earnings quality indicates management's less tendency to manipulate profits and timely identification of losses. According to Dechow et al. (2008), earnings quality is a reflection of the operational performance of the current operations and is a suitable indicator for evaluating the future operational performance and the value of the company.

Quality of earnings is the ability of earnings to predict future cash flows (Altamuro & Beatty, 2006). Higher earnings quality provides more information about the financial performance characteristics of a company (Dechow et al., 2010).

In this research, the quality of earnings is obtained through calculating the residual standard deviation of regression accruals on past, present, and future operating cash flows and changes in income and gross changes in equipment, plant and machinery. This relationship essentially reflects the ability of earnings to predict cash flows that transfer cash over different time periods.

The earnings quality is important from three perspectives. From the investors' perspective, the quality of earnings indicates how resources are allocated. Low-quality earnings due to improper resource allocation can lead to a reduction in economic growth. From the users of earnings perspective, reported earnings are usually used in debt contracts and incentive schemes, so decision-making based on low-quality earnings will involuntarily transfer wealth. For example, if earnings are used as a performance evaluation metric for management, presenting earnings higher than reality can lead to excessive rights and benefits for managers. Additionally, such earnings may hide the financial crisis of the company and lead to improper accreditation by creditors. Furthermore, when standard-setters are seeking feedback on the efficiency of standards, they will focus on the outputs of the accounting system, including earnings. In other words,

from the perspective of standard-setters, the quality of financial reports and earnings indirectly indicates the quality of financial reporting standards.

Regarding the level of cash holdings, among various models such as the balancing model, the hierarchy model, and the free cash flow model, numerous studies have been conducted (Mohammadi et al., 2018). The balancing model states that companies decide on the level of holding cash by comparing the costs and benefits resulting from holding cash. Holding cash reduces the likelihood of financial crises and also reduces the risk of missing investment opportunities due to insufficient access to cash. However, holding cash also has a cost, which is the opportunity cost of not investing in current assets, created as a result of holding cash. The key point of this theory is that there is an optimal level of cash for companies, and management, with an active approach, decides on holding cash based on a cost-benefit analysis. According to the balancing theory, management should adjust the company's cash balance in a way that aligns the interests of holding cash with its ultimate costs to maximize shareholder wealth.

According to the hierarchy model presented by Myers & Majluf (1984), companies prefer to finance from internal sources rather than external financing, which involves sensitive information. This theory is based on the assumption that individuals within the company are more informed than shareholders. If internal resources are insufficient for optimal financing of investment projects, and information asymmetry prevents it, managers may be forced to abandon profitable projects. In such a situation, cash is highly valuable, and the only opportunity to issue shares without losing market value occurs when there is no information asymmetry or it is minimal. Therefore, in terms of financing, companies initially finance investment resources from retained earnings, then with low-risk debt, followed by high-risk debt, and finally through equity issuance. The goal of following this order is to reduce the costs of information asymmetry and other financing costs. According to this perspective, due to information asymmetry and problems arising from external financing, financing policies follow a hierarchical approach based on the preference for internal over external sources. Consequently, since internal financing management prefers over external financing, there is a

tendency to accumulate cash to finance internally in the first stage within the company and avoid external sources as much as possible (Ferreira & Vilela, 2004). According to this model, companies do not have a specific target amount for cash levels.

The free cash flow model, proposed by Jensen (1986), states that companies should accumulate cash under their control and invest it in decisions that may not necessarily align with shareholder interests. Free cash flow is the cash remaining after financing all projects with a positive net present value discounted at the appropriate cost of capital. The conflict of interests between shareholders and managers regarding dividend payout policies, especially when organizations have significant free cash flows, is more pronounced. Payouts in the form of dividends reduce managers' power and may be subject to control and supervision by capital markets if capital needs to be raised. On the other hand, internal financing allows managers to avoid such supervision. Furthermore, if managers distribute free cash flows among shareholders instead of investing in low-return projects, it can increase shareholder expectations and prompt managers to decide on the future use of cash flows. This is because if they do not pay dividends in the future, their stock prices will decrease significantly (Jensen & Meckling, 1976).

Ferreira & Vilela (2004) found that companies follow a balancing model and determine the optimal level of cash by comparing the final costs and benefits of holding cash. The hierarchy model is also consistent with the research findings. However, empirical evidence contradicts the free cash flow model, showing that the representation of conflicts between managers and shareholders does not play a significant and influential role in reducing cash holdings by companies.

International research in this area has led to different results. Ferreira & Vilela (2004) demonstrated that international data from different countries creates diversity in various areas such as legal environment, shareholder protection, ownership structure, and capital market development, which is related to agency costs at different levels.

## 1.2. Research Hypotheses

H1. Political connections effect the relationship between the level of cash holdings and earnings quality.

H2. Political connections effect the relationship between

the previous year's operating cash flows and earnings quality.

H3. Political connections effect the relationship between the current year's operating cash flows and earnings quality.

H4. Political connections effect the relationship between the future year's operating cash flows and the earnings quality.

## 2. Research Methodology

The statistical population under the study includes all companies listed on the Tehran Stock Exchange. The reasons for choosing companies from the Tehran Stock Exchange are as follows:

A) Access to financial information of listed companies is easier, especially since some information is available in compressed databases.

B) Since the financial information of listed companies is under auditing, it is assumed that the information in the financial statements of these companies is of higher quality.

C) Due to the mandatory nature of financial accounting regulations and standards in preparing financial statements, it is assumed that the information in the financial reports of the companies is more homogeneous and more comparable.

In this study, a specific formula was not used to estimate the sample size and sampling. Instead, an elimination method was used. In other words, companies in the statistical population that met the following conditions were selected as the sample, and the rest were excluded:

For this research, companies listed on the TSE that meet the following conditions are considered as the statistical sample:

1. They have been listed on the TSE from 2016 to 2022.
2. Their trading symbol has not been delisted from the stock exchange board during the years 2016 to 2022.
3. Companies should not have changed their fiscal year during the specified periods.
4. The required financial information, especially notes accompanying financial statements, should be

available.

5. The company should not have had a trading halt during the research period.

TABLE 1- FIRM-YEAR OBSERVATIONS

Sample size	Years under consideration	Observations (firm-year)
120	7	840
Unavailable data		(49)
total		791

### Dependent Variable

TCA (Earnings Quality): To identify discretionary accruals (DAC), the modified Jones model is employed. In this model, the total accruals (TACC) for each period are calculated as follows:

$$TACC_{i,t} = NI_{i,t} - CFO_{i,t}$$

Then, using the modified Jones model, non-discretionary accruals ( $NDAC_{i,t}$ ) for the period are estimated:

$$\frac{NDAC_{i,t}}{A_{i,t-1}} = a \left( \frac{1}{A_{i,t-1}} \right) + b \left( \frac{\Delta REV_{i,t}}{A_{i,t-1}} \right) + c \left( \frac{PPE_{i,t}}{A_{i,t-1}} \right) + \varepsilon_{i,t}$$

In the above model,  $A_{i,t-1}$  represents the total assets at the beginning of the period,  $\Delta REV_{i,t}$  denotes changes in operating revenue,  $PPE_{i,t}$  refers to gross properties, plant and equipment,  $a$ ,  $b$ ,  $c$ , are coefficients in the model. The coefficients of the modified Jones model are estimated using the following least squares method for each industry and year:

$$\frac{TACC_{i,t}}{A_{i,t-1}} = a \left( \frac{1}{A_{i,t-1}} \right) + b \left( \frac{\Delta REV_{i,t}}{A_{i,t-1}} \right) + c \left( \frac{PPE_{i,t}}{A_{i,t-1}} \right) + \varepsilon_{i,t}$$

Finally, the level of discretionary accruals ( $DAC_{i,t}$ ) is calculated as the difference between total accruals and estimated non-discretionary accruals based on the modified Jones model:

$$DAC_{i,t} = TACC_{i,t} - NDAC_{i,t}$$

In the above equation,  $DAC_{i,t}$  represents discretionary accruals,  $TACC_{i,t}$  denotes total accruals, and  $NDAC_{i,t}$  refers to non-discretionary accruals.

### Independent Variables:

**CASH:** The amount of cash for company  $i$  at the end of year  $t$ . Cash refers to the total cash divided by the total net assets, where net assets are defined as the sum of assets excluding cash and equivalents.

**Pcon\_it (Political connections):** To measure the political connections, the percentage of shares owned

by public organizations is used. public organizations, as the main supporters of the economy in any country, have always played a significant role in shaping the destiny of economic units in every society. Governments, due to their decision-making power in companies and the implementation of their macroeconomic policies, have always been a major investor in developing countries, especially in Iran. Regardless of the discussions about the advantages or disadvantages of this type of ownership, it should be noted that the reporting and accounting systems of companies, influenced by their corporate governance, are affected by the type of corporate ownership. The argument presented is that government-owned companies, due to their special conditions (political relationships with the government), bear lower costs from the government.

**CFO (Operating Cash Flows):** Operating cash flows are the cash flows that result from changes in assets at the beginning of the period. This variable is introduced to control the potential relationship between liability items and cash flows.

**Cfo<sub>it-1</sub>** : Calculated by dividing the operating cash flow of the previous year by the total assets.

**Cfo<sub>it</sub>** : Calculated by dividing the operating cash flow of the current year by the total assets.

**Cfo<sub>it+1</sub>** : Calculated by dividing the operating cash flow of the next year by the total assets.

#### Control Variables:

**REV:** Calculated from the change in the net sales of company  $j$  in year  $t$ .

**PPE:** Calculated from the gross properties, plant and equipment of company  $j$  in year  $t$ .

**ROA:** Return on assets, calculated by dividing the ratio of net income before interest and taxes to total assets.

**SIZE:** Size of company  $i$  at the end of year  $t$ . The natural logarithm of the total assets is used as a representative measure of company size. The use of the natural logarithm ensures that the potential coefficients of these variables in the model are not affected by the effects of large scales and is included to control the size effect on the quality of liability items.

**Industry:** Companies active in 8 industries will be considered in this study, using 7 dummy variables in

the regression model to account for the control effect of the industry variable.

**GROW:** Calculated by subtracting the end-of-period sales from the beginning-of-period sales, divided by the beginning-of-period sales.

**LEV:** The leverage variable, obtained by dividing the total debt by total assets. Companies with higher leverage may have greater motivation to manage earnings.

**BIG (Audit Firm Size):** Larger audit firms (with brand names) have a higher reputation, and this reputation enhances the credibility of the auditor. The auditor's credibility provides information about the auditor's monitoring ability and, consequently, the auditor's ability to influence the quality of the information obtained. In most research conducted in Iran, the Audit Organization is considered a large audit firm, and the rest of the audit firms are considered small firms. Therefore, if a company is audited by the Audit Organization, it will be assigned the value of one, and if a company is audited by other audit firms, it will be assigned the value of zero.

**Years:** The years of the study in terms of (year and audit firm) will be entered into the model as a control variable.

## 3 Findings

### 3.1. Empirical Study

The variables used in the modified Jones model to estimate parameters related to non-discretionary accruals include the total accruals (TAC), total assets (TA), changes in total revenue (sales) (REV), gross property, plant, and equipment (PPE), and changes in accounts and notes receivable (REC). The parameters of the model for calculating operating cash flow are also specified and presented. Descriptive statistics for the aforementioned variables, measured using data from 120 examined companies during the test period (years 2016-2022), include mean, median, standard deviation, minimum, skewness, and maximum, as presented in Table 2.

TABLE 2- DESCRIPTIVE STATISTICS

variable	max	min	Skewness	S.D	mean
TAC	13585306.0	-11522400.0	3.5	1186195.4	112741.1

TA	114000000.0	51865.900	5.1	13651269.8	4118691.9
ΔREV	41302288.0	-26604722	5.7	3401160.5	483313.1
PPE	37664123.0	4912.0000	5.5	3886031.3	1176250.6
ΔREC	15855722.0	-5045787.0	9.1	956814.7	139320.3
CFO	24771235.0	-3311315.0	5.5	2075994.2	571908.3
GSALE	50.6000000	-1.0000000	20.3	2.0000000	0.300000
N.I	246795710	-1600559.0	5.2	341215.00	684649.0
ROA	1.5333600	-0.7179000	5.7	0.6215000	0.123510
LEV	0.9967000	.00840000	2.7	0.6527	0.6629
SIZE	18.551700	10.856400	1.6	16.4293	15.2310

Note: Figures in millions

Using the components listed in Table 2, two estimation models are constructed. The first model estimates the component of operating cash flow, and the second model extracts the component of earnings management based on accruals. These models are employed to estimate the two main models corresponding to the two main hypotheses of the study. Subsequently, descriptive statistics for the components of the two main models are presented.

### 3.2. Normality of the Variables

For data analysis and selecting the appropriate tests, we need to examine the normality of the variables. If the variables are normally distributed, we can use both parametric and non-parametric tests. However, if the variables are not normally distributed, we are only allowed to use non-parametric tests. The Jarque-Bera test is employed to assess the normality of the variables. This test is used to determine whether the data of the target variable follows a normal distribution. If the significance level of this test is greater than 0.05, the null hypothesis, stating that the data is normally distributed, is accepted. Thus, the following statistical hypothesis is examined:

**H<sub>0</sub>:** The data distribution is not significantly different from a normal distribution.

**H<sub>1</sub>:** The data distribution is significantly different from a normal distribution.

TABLE 3- THE TEST OF NORMALITY

variable	Sample size	Jarque-Bera	P-value	result
earnings quality	791	3.293	0.193	normal
cash	791	0.989	0.875	normal
political connection	791	1.111	0.574	normal
cash flow <sub>t</sub>	791	0.768	0.681	normal

cash flow <sub>t-1</sub>	791	0.762	0.692	normal
cash flow <sub>t+1</sub>	791	0.792	0.632	normal
sales change	791	0.788	0.674	normal
property, plant & equipment	791	0.864	0.781	normal
firm size	791	1.542	0.746	normal
industry	791	2.136	0.843	normal
sales growth	791	0.874	0.941	normal

Table 3 present the Jarque-Bera statistics and the p-value of variables. The hypotheses under study are provided, and if the observed p-value for the research variables is greater than 0.05, the null hypothesis is accepted. Therefore, the data related to the research variables are considered to be normal. Hence, in this study, we are allowed to use parametric tests.

### 3.3. Regression Model Estimation for Calculating Accruals

The estimation of the modified Jones accrual regression model will be addressed based on the theoretical foundations of the study. The model used for estimation is as follows:

$$\frac{TA_{it}}{Asset_{it-1}} = \alpha_1 \frac{1}{Asset_{it-1}} + \alpha_2 \frac{\Delta REV_{it}}{Asset_{it-1}} + \alpha_3 \frac{PPE_{it}}{Asset_{it-1}} + \varepsilon_{it}$$

The aim of this regression estimation is to obtain the coefficients  $\alpha_1$ ,  $\alpha_2$ , and  $\alpha_3$  so that they can be used in the second modified Jones equation to calculate accruals. Table 4 presents the results obtained from the regression estimation.

TABLE 4- JONES ACCRUAL MODEL REGRESSION ESTIMATION

Model components	$\beta$ Coefficient	Standard error	t statistic	p-value
$\alpha_1$	389603-6	14.59477	-6.5504	0.00
$\alpha_2$	0.03347	0.0050	6.571160	0.00
$\alpha_3$	003190-0	0.0891	03579-0	0.001

Durbin-Watson statistics= 2.002  
R<sup>2</sup>= 0.717  
Adj.R2 = 0.709  
F-statistic = 516.2374  
Sig. = .0000  
Housman = 12.485412  
Sig. = 0.0107

Note: The dependent variable is the ratio of total liabilities to total assets.

The Durbin-Watson statistic in Table 4 is equal to 2.002, indicating no autocorrelation in the errors, and consequently, linear regression is permissible. The R<sup>2</sup> and adjusted R<sup>2</sup> statistics are 0.717 and 0.709, respectively, suggesting that the estimated regression model explains approximately 70% of the variations in accruals. These statistics indicate the precision and

reliability of the model, but the significant levels obtained for the coefficients of the regression model demonstrate their significance.

### 3.4. Fit of the Main Models of the Study

#### 3.4.1. Reliability Test of Variables

The stability or reliability of the research variables was examined using the Im et al. (2003) and Levin and Lin (1992) tests. The results of the test are shown in Table 5-7. According to the results of the IPS test (Table 4), since the P-value for all variables is less than 0.05, it can be concluded that these research variables have been stationary over the research period. The results of the IPS test indicate that the means and variances of the variables over time and the covariances between variables across different years have remained constant. Therefore, the use of these variables in the model does not lead to spurious regression.

TABLE 5- IM, SONS AND SHIN (IPS) TEST

variable	p-value	W-stat
Earnings quality	0.0040	56.711
cash	0.0038	54.359
Political connection	0.0039	55.487
Cash flow <sub>t</sub>	0.0037	53.794
Cash flow <sub>t-1</sub>	0.0022	52.253
Cash flow <sub>t+1</sub>	0.0015	53.275
Sales change	0.0000	0.321
property, plant & equipment	0.0036	53.480
ROA	0.0009	12.860
Firm size	0.0052	73.214
Industry	0.0027	37.845
Sales growth	0.0040	56.711

#### 3.4.2. Determining the Appropriate Model for Regression Model Estimation

Given the existing research literature and the nature of the research hypotheses, a combination of data has been used in this study. To determine the appropriate model (pooled or panel with fixed or random effects) for testing the hypotheses, the Chow and Hausman tests have been employed.

##### a) Chow Test

The results of the F-test for the regression model of the present study are presented in Table 6.

TABLE 6- CHOW'S TEST

model	F statistic	Prob.	Results	
1	84.91	0.007	Reject the null hypothesis	Panel
2	65.32	0.008	Reject the null hypothesis	Panel
3	72.46	0.007	Reject the null hypothesis	Panel
4	79.32	0.007	Reject the null hypothesis	Panel

Regarding models one through four, the Chow test results, considering the significance level, indicate that  $H_0$  (pooled model) is not confirmed. In other words, there are individual or group effects, and panel data methods should be used for estimating the regression model in the subsequent analysis. To determine the type of panel model (with random effects or fixed effects), the Hausman test is used.

##### b) Hausman Test

After establishing that the variance is not the same across years, the method for estimating the model (fixed effects or random effects) needs to be determined. For this purpose, the Hausman test is employed.

In the Hausman test, the null hypothesis ( $H_0$ ) assumes the compatibility of estimates with random effects, while the alternative hypothesis ( $H_1$ ) suggests the incompatibility of estimates with random effects.

The results of the Hausman test for models one through four are presented in Table 7. The results indicate that the Hausman test statistic is significant at a 95% confidence level, supporting the alternative hypothesis ( $H_1$ ). Therefore, based on the Hausman test, fitting regression models one through four in this study using the fixed effects panel data model is appropriate.

TABLE 7- HAUSMAN TEST

model	$\chi^2$	Prob.	Results test	
1	27.323	0.0017	Reject the null hypothesis	Fixed effects
2	48.119	0.0058	Reject the null hypothesis	Fixed effects
3	30.695	0.0026	Reject the null hypothesis	Fixed effects
4	36.147	0.0031	Reject the null hypothesis	Fixed effects

#### 3.4.3. Classical Regression Assumptions Test

As previously mentioned, before fitting regression models, it is necessary to test the assumptions of linear regression.

**Serial Independence Test:** The Durbin-Watson test examines the serial correlation among the residuals (errors) of the regression based on the following statistical hypothesis:

$H$ : There is no serial correlation among the errors.

$H_1$ : There is serial correlation among the errors.

The Durbin-Watson statistic, along with critical values at the 1% significance level, is presented in Table 8. Given that the calculated Durbin-Watson statistic for the regression model in the current study exceeds the



critical value at the 0.01 significance level, we reject the null hypothesis, indicating the presence of serial correlation in the residuals of regression models one through four at the 0.01 significance level.

TABLE 8- INDEPENDENCE OF ERRORS

model	critical values		Durbin-Watson Stat.
	DU	DI	
1	1.909	1.523	2.212
2	1.954	1.467	2.005
3	1.784	1.634	1.986
4	1.912	1.476	2.021

Note: significance at 99%

**Examination of Residuals' Normality:** One of the assumptions of regression is that the errors in the equation have a normal distribution with a mean of zero. To assess the normality of the errors in the regression equation, a residuals probability plot is created, as depicted in Figure 1. In regression model (1), the mean of the distribution of residuals is approximately zero, and its standard deviation is close to one (0.974), indicating that the distribution of residuals in the regression model is normal.

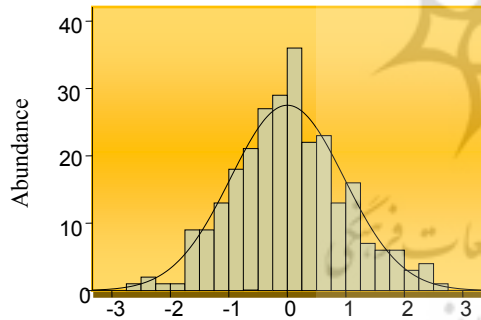


Figure 1- Error components of the regression model

**Heteroscedasticity:** One significant issue encountered in econometrics is the matter of heteroscedasticity, which refers to the situation where the variances of error terms in a regression model are unequal. In order to estimate heteroscedasticity, the White test is employed in this study. The results of this test are presented in Table 9.

TABLE 9- RESULTS FROM VARIANCE HETEROGENEITY

model	White Stat.	P-value	Test result
1	2.238	0.207	Absence of heterogeneity
2	1.693	0.386	
3	1.842	0.291	
4	2.016	0.314	

The results of the White test (F-statistic) are provided in Table 9. The results indicate that the F-statistic for models one through four is not statistically significant at the 0.05 significance level. Therefore, the null hypothesis, suggesting the absence of heteroscedasticity in the variance among the model data at the 0.05 significance level, is not rejected. Consequently, the OLS regression model can be utilized.

#### Test for Independence of Independent Variables:

According to Table 10, the expected value ratio and the variance inflation factor for all independent variables are greater than 2.0, and the inflation factor for inflation variance is very close to 1 (much less than 5). Therefore, the hypothesis of no multicollinearity among the independent variables is confirmed.

TABLE 10- COLLINEARITY TEST BETWEEN INDEPENDENT VARIABLES

variable	tolerance	VIF
Earnings quality	0.876	1.141
cash	0.718	1.194
Political connection	0.837	1.672
Cash flow <sub>t</sub>	0.814	1.521
Cash flow <sub>t-1</sub>	0.801	1.571
Cash flow <sub>t+1</sub>	0.586	1.707
Sales change	0.519	1.927
property, plant and equipment	0.460	2.176
ROA	0.407	2.457
Firm size	0.361	2.773
Industry	0.319	3.131

After examining the classical assumptions, the next section investigates the results of fitting regression models for the research, and consequently, the research hypotheses are examined and tested.

### 3.5. Results of Fitting Regression Models

#### 3.5.1. Test of Hypothesis One

**Hypothesis One:** Political connections affect the relationship between cash holdings and earnings quality.

Test Model for Hypothesis (1):

$$\begin{aligned}
 TCA_{it} = & \beta_0 + \beta_1 \text{Cash}_{it} + \beta_2 \text{Pcon}_{it} \\
 & + \beta_3 \text{Cash} * \text{Pcon}_{it} + \beta_4 \text{Roa}_{it} \\
 & + \beta_5 \text{Size}_{it} + \beta_6 \text{Grow}_{it} + \beta_7 \text{Lev}_{it} \\
 & + \beta_8 \text{Industry} + \beta_9 \text{Big}_{it} \\
 & + \beta_{10} \text{years}_{2016-2022} + \varepsilon_{it}
 \end{aligned}$$

**TABLE 11- THE RESULTS OF FITTING THE FIRST REGRESSION EQUATION**

variable	coefficient	Std. D.V	t stat.	Sig.
C	-2.622289	1.909931	-1.37298	0.1698
cash	-0.00000029	0.00000009	-3.20665	0.0013
Political connection	0.00000006	0.000000118	0.544937	0.5858
Cash flow*Political connection	0.000000363	0.000000138	2.640501	0.0083
ROA	6.224607	6.666039	0.933779	0.3504
Size	0.000000181	0.000000238	0.761932	0.4461
Grow	1.575157	0.520475	3.02638	0.0025
Lev	1.977524	1.892923	1.044693	0.2962
Industry	-3.236424	5.47605	-0.59101	0.5545
Big	-0.053251	0.046537	-1.14427	0.0029
R-squared				0.300876
Adjusted R-squared				0.292470
F-statistic				2.622697
Prob(F-statistic)				0.00000
Durbin-Watson stat				1.769701

According to Table 11, the significance level of the cash variable (0.0013) is less than the significance level considered in this study (5%). Also, the absolute value of the t-statistic for these variables is greater than the t-statistic obtained from the table with the same degrees of freedom. Therefore, the null hypothesis is rejected at the 95% confidence level, and the alternative hypothesis, which suggests a significant relationship between cash holdings and earnings quality for companies with political connections, is confirmed. Therefore, considering the negative sign of the coefficient for this variable, it can be concluded that there is an inverse relationship between cash holdings and earnings quality for companies with political relationships. Thus, the primary hypothesis one of the research is accepted.

**3.5.2. Test of Hypothesis Two**

Hypothesis Two: Political connections affect the relationship between the operating cash flow of companies in the previous year and earnings quality.

Test Model for Hypothesis (2):

$$TCA_{it} = \beta_0 + \beta_1 CFO_{it-1} + \beta_2 Pcon_{it} + \beta_3 Cfo_{it-1} * Pcon_{it} + \beta_4 Roa_{it} + \beta_5 Size_{it} + \beta_6 Grow_{it} + \beta_7 Lev_{it} + \beta_8 Industry + \beta_9 Big_{it} + \beta_{10} years_{2016-2022} + \epsilon_{it}$$

**TABLE 12- THE RESULTS OF FITTING THE SECOND REGRESSION EQUATION**

variable	coefficient	Std. D.V	t stat.	Sig.
C	18.44301	0.337301	54.67827	0.000
CFO <sub>it-1</sub>	0.062883	0.02967	2.119455	0.0344
Pcon	0.00000001	0.0000000029	2.842779	0.0046
CFO <sub>it-1</sub> *Pcon	0.099358	0.203319	0.488681	0.6252

ROA	-0.301224	0.15959	-1.88748	0.0595
Size	0.512058	0.167626	3.054766	0.0023
Grow	-0.077608	0.058733	-1.32138	0.1868
Lev	-0.079911	0.0818	-0.9769	0.0289
Industry	-0.022188	0.021632	-1.02566	0.3054
Big	0.190707	0.154298	1.235963	0.0169
R-squared				0.212090
Adjusted R-squared				0.206613
F-statistic				3.24708
Prob(F-statistic)				0.000011
Durbin-Watson stat				1.758343

According to Table 12, the significance level of the variable "operating cash flow of the previous year" (0.0344) is less than the significance level considered in this study (5%). Also, the absolute value of the t-statistic for these variables is greater than the t-statistic obtained from the table with the same degrees of freedom. Therefore, the null hypothesis is rejected at the 95% confidence level, and the alternative hypothesis, which suggests a significant relationship between the operating cash flow of the previous year for companies with political relationships and earnings quality, is confirmed. Thus, the primary hypothesis two of the research is also accepted.

**3.5.3. Test of Hypothesis 3**

Hypothesis 3: Political relationships have an impact on the relationship between the current year's operating cash flow of companies and profit quality.

Hypothesis Test Model (3):

$$TCA_{it} = \beta_0 + \beta_1 Cfo_{it} + \beta_2 Pcon_{it} + \beta_3 Cfo_{it} * Pcon_{it} + \beta_4 Roa_{it} + \beta_5 Size_{it} + \beta_6 Grow_{it} + \beta_7 Lev_{it} + \beta_8 Industry + \beta_9 Big_{it} + \beta_{10} years_{2016-2022} + \epsilon_{it}$$

According to Table 13, the significance level of the current year's operating cash flow variable (0.0064) is less than the significance level considered in this study (5%); moreover, the absolute value of the t-statistic for these variables is greater than the t-statistic obtained from the table at the same degrees of freedom. Therefore, the null hypothesis is rejected at a 95% confidence level, and the alternative hypothesis that there is a significant relationship between the current year's operating cash flow of companies and the quality of earnings for companies with political relationships is confirmed. Thus, considering the negative sign of the coefficient for this variable, it can be concluded that

there is an inverse relationship between the current year's operating cash flow of companies and the quality of earnings for companies with political relationships. Therefore, the main hypothesis of the third research question is also accepted.

**TABLE 13- THE RESULTS OF FITTING THE THIRD REGRESSION EQUATION**

variable	coefficient	Std. D.V	t stat.	Sig.
C	-6.16183	6.36847	-0.968	0.3333
CFO <sub>it</sub>	-0.09021	0.31756	-0.284	0.0064
Pcon	7.762866	0.520175	14.924	0.00
CFO <sub>it</sub> *Pcon	-0.05239	0.477321	-0.11	0.0126
ROA	-0.06591	0.657588	-0.1	0.0202
Size	0.228158	0.114418	1.9941	0.0461
Grow	0.007387	0.013196	0.5598	0.0756
Lev	0.579861	0.63256	0.9167	0.0093
Industry	-0.82668	0.79509	-1.04	0.0085
Big	0.227606	0.613296	0.3711	0.0105
R-squared				0.306145
Adjusted R-squared				0.290434
F-statistic				3.658631
Prob(F-statistic)				0.000006
Durbin-Watson stat				2.000002

### 3.5.4. Test of Hypothesis 4

**Hypothesis 4:** Political relationships have an impact on the relationship between the next year's operating cash flow of companies and profit quality.

Hypothesis Test Model (4):

$$TCA_{it} = \beta_0 + \beta_1 Cfo_{it+1} + \beta_2 Pcon_{it} + \beta_3 Cfo_{it+1} * Pcon_{it} + \beta_4 Roa_{it} + \beta_5 Size_{it} + \beta_6 Grow_{it} + \beta_7 Lev_{it} + \beta_8 Industry + \beta_9 Big_{it} + \beta_{10} years_{2016-2022} + e_{it}$$

According to Table 4 to 13, the significance level of the next year's operating cash flow variable (0.0003) is less than the significance level considered in this study (5%); moreover, the absolute value of the t-statistic for these variables is greater than the t-statistic obtained from the table at the same degrees of freedom. Therefore, the null hypothesis is rejected at a 95% confidence level, and the alternative hypothesis that there is a significant relationship between the next year's operating cash flow of companies and the quality of earnings for companies with political relationships is confirmed. Thus, considering the negative sign of the coefficient for this variable, it can be concluded that there is an inverse relationship between the next year's operating cash flow of companies and the quality of

earnings for companies with political relationships. Therefore, the main hypothesis of the fourth research question is also accepted.

**TABLE 14- THE RESULTS OF FITTING THE FOURTH REGRESSION EQUATION**

variable	coefficient	Std. D.V	t stat.	Sig.
C	-14.0444	7.428106	-1.891	0.0587
CFO <sub>it+1</sub>	-0.49898	0.37244	-1.34	0.0003
Pcon	7.777043	0.523699	14.85	0.000
CFO <sub>it+1</sub> *Pcon	-0.224	0.493944	-0.454	0.0502
ROA	-0.07392	0.666424	-0.111	0.0117
Size	0.228949	0.113938	2.0094	0.0445
Grow	0.005469	0.013075	0.4182	0.6758
Lev	0.594637	0.643441	0.9242	0.0554
Industry	-0.8529	0.801461	-1.064	0.2872
Big	0.128726	0.62017	0.2076	0.0356
R-squared				0.221630
Adjusted R-squared				0.210399
F-statistic				4.578927
Prob(F-statistic)				0.000000
Durbin-Watson stat				2.013326

## 4. Discussion and conclusion

This study investigated the impact of cash holdings on earnings quality. The results of the hypothesis testing indicate that there is an inverse relationship between the level of cash holdings and the earnings quality of listed companies with political connections. In other words, as the level of cash holdings in companies with political relationships increases, the earnings quality decreases, indicating a negative effect of political connections on the financial performance of these companies. It seems that the increase in cash holdings in these companies may be associated with maintaining and expanding political connections. Therefore, it is possible that the increase in cash holdings, as one of the strategies of companies in the field of political connections, can lead to unnecessary costs. These costs may be reflected in the financial structure of the company, negatively impacting earnings quality. Moreover, the focus on cash holdings instead of investing in productive activities, fair trade relationships, or improving operational performance may negatively affect financial performance. The inverse relationship between cash holdings and earnings quality in companies with political connections may result from suboptimal management and strategic decisions in these companies, influenced by the political environment. Therefore, companies with political connections are

advised to carefully evaluate their cash holding strategies and strive to optimize their financial management. This optimization may include reducing unnecessary costs associated with political connections and focusing more on productive investments and operational performance improvement.

The results of hypotheses two to four indicate that in companies with political connections, there is a significant inverse relationship between operating cash flow and earnings quality. Therefore, an increase in operating cash flow in companies with political connections leads to a decrease in earnings quality. It is possible that managers, in using operating cash flow, tend to meet the financial needs of political connections rather than improving the operational performance of the company. To improve earnings quality in these companies, managers may need to consider better analysis of financial needs and more efficient use of financial resources in cash flow management. Additionally, increasing transparency in financial reporting and information related to cash flow may help better understand financial issues and company performance.

In summary, the study suggests that companies with political connections carefully evaluate their cash holding strategies, focusing on optimizing financial management, reducing unnecessary costs, and enhancing operational performance. Moreover, increasing transparency in financial reporting can mitigate the negative impacts of political connections and improve earnings quality.

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